Oryzomys antillarum

Oryzomys antillarum, also known as the **Jamaican rice rat**,[7] is an extinct rodent of Jamaica. A member of the genus *Oryzomys* within the family Cricetidae, it is similar to *O. couesi* of mainland Central America, from where it may have dispersed to its island during the last glacial period. *O. antillarum* is common in subfossil cave faunas and is also known from three specimens collected live in the 19th century. Some historical records of Jamaican rats may pertain to it. The species probably became extinct late in the 19th century, perhaps due to the introduction of the small Asian mongoose, competition with introduced rodents such as the brown rat, and habitat destruction.

Oryzomys antillarum was a medium-sized rat, similar in most respects to *Oryzomys couesi*. The head and body length was 120 to 132 mm (4.7 to 5.2 in) and the skull was about 30 mm (1.2 in) long. The upperparts were reddish and graded into the yellowish underparts. The tail was about as long as the head and body, sparsely haired, and darker above than below. The species differed from *O. couesi* in having longer nasal bones, shorter incisive foramina (perforations of the front part of the palate), and more robust zygomatic arches (cheekbones).

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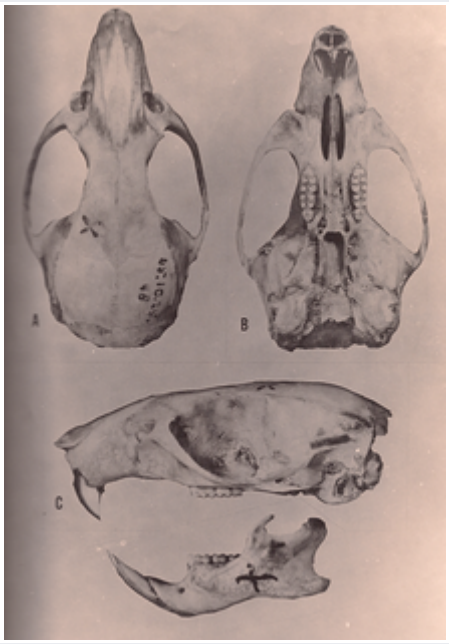
Taxonomy

In his 1877 monograph on North American rodents, Elliott Coues mentioned two specimens of *Oryzomys* from Jamaica in the collections of the United States National Museum (USNM). According to Coues, the specimens were similar to the marsh rice rat (*Oryzomys palustris*) of the United States, but different in color.

Oryzomys antillarum



Holotype skull, seen from above (A), below (B) and the left (C)[1]

Conservation status

Extinct (IUCN 3.1)[2]

Scientific classification

Kingdom:	Animalia
Phylum:	Chordata
Class:	Mammalia
Order:	Rodentia
Family:	Cricetidae
Subfamily:	Sigmodontinae
Genus:	*Oryzomys*
Species:	***O. antillarum***

Binomial name

Oryzomys antillarum
Thomas, 1898

Although he wrote that they probably represented a separate form, he refrained from giving a scientific name to them because of the possibility that the form had already received a name he did not know of.[8] The species was first formally described by Oldfield Thomas in 1898 based on a specimen that had been in the British Museum of Natural History since 1845. He recognized it as a separate species of *Oryzomys*, *Oryzomys antillarum*, but wrote that it was related to the mainland Central American *O. couesi*. Thomas suspected that the species was already extinct on Jamaica, but that it or a similar rice rat could still be found in the unexplored interior of Cuba or Hispaniola.[3]

Revising North American *Oryzomys* in 1918, Edward Alphonso Goldman retained *O. antillarum* as a separate species, but conceded that it was so similar to mainland *O. couesi* that it may have been introduced on Jamaica.[9] In 1920, Harold Anthony reported that remains of *O. antillarum* were common in coastal caves, suggesting that the species had previously been an important part of the diet of the barn owl (*Tyto alba*).[10] In 1942, Glover Morrill Allen doubted that it was even a distinct species[11] and in his 1962 Ph.D. thesis, Clayton Ray, who examined numerous cave specimens, agreed and retained it as only a "weakly differentiated subspecies" of *Oryzomys palustris* (which by then included *O. couesi* and other Mexican and Central American forms), *Oryzomys palustris antillarum*.[12] Philip Hershkovitz came to the same conclusion in a 1966 paper.[4] After *O. couesi* of Mexico and Central America was again classified as a species distinct from the marsh rice rat (*O. palustris*) of the United States, the Jamaican form came to be regarded as a subspecies of the former, *Oryzomys couesi antillarum*.[5]

Distribution of *Oryzomys antillarum* (green) and other species of *Oryzomys*, including *O. couesi* (red) and the marsh rice rat (*O. palustris*; blue)

Synonyms[fn 1][6]

- *Oryzomys antillarum* Thomas, 1898[3]
- *Oryzomys palustris antillarum*: Hershkovitz, 1966[4]
- *[Oryzomys couesi] antillarum*: Honacki et al., 1982[5]

In a 1993 review, Gary Morgan reinstated the animal as a distinct species closely related to *O. couesi*, citing an unpublished paper by Humphrey, Setzer, and himself.[6] Guy Musser and Michael Carleton, writing for the 2005 third edition of *Mammal Species of the World*, continued to classify the Jamaican form as part of *O. couesi*, but did not reference Morgan.[13] However, in a 2006 review of the contents of *Oryzomys*, Marcelo Weksler and colleagues listed *O. antillarum* as a separate species, citing Morgan,[14] and in a 2009 paper on western Mexican *Oryzomys* Carleton and Joaquín Arroyo-Cabrales did the same.[15]

According to the classification by Carleton and Arroyo-Cabrales, *Oryzomys antillarum* is one of eight species in the genus *Oryzomys*, which occurs from the eastern United States (*O. palustris*) into northwestern South America (*O. gorgasi*).[16] *O. antillarum* is further part of the *O. couesi* section, which is centered on the widespread Central American *O. couesi* and also includes various other species with more limited and peripheral distributions.[17] Many aspects of the systematics of the *O. couesi* section remain unclear and it is likely that the current classification underestimates the true diversity of the group.[18] *Oryzomys* previously included many other species, which were progressively removed in various studies culminating in the 2006 paper by Weksler and colleagues, which excluded more than forty species from the genus.[19] All are classified in the tribe Oryzomyini ("rice rats"), a diverse assemblage of American rodents of over a hundred species,[20] and on higher taxonomic levels in the subfamily Sigmodontinae of family Cricetidae, along with hundreds of other species of mainly small rodents.[21]

Description

Oryzomys antillarum was a medium-sized rodent, about as large as *O. couesi*. According to Thomas's description, the upperparts were reddish, slightly brighter on the rump and more grayish on the head. The color of the upperparts graded into that of the underparts, which were yellowish. The hairs of the underparts were grayish at the bases. The small ears were black on the outer and yellow on the inner side and the upper surfaces of the hands and feet were whitish. The tail was nearly naked and was light brownish above and lighter below.[3] Goldman wrote that the specimens in the USNM were rather more reddish, but their color may have been altered because they had been preserved in alcohol.[22] Coues had described these as rusty brown above and washed with the same color below.[8] Andrew Arata compared the USNM specimens with examples of the reddish Florida subspecies of the marsh rice rat, *Oryzomys palustris natator*, for Ray and found that they were more reddish than even the most strongly colored animals from Florida.[23]

Measurements of *Oryzomys antillarum* (in millimeters)[24]

Specimen	Total length	Head and body	Tail	Hindfoot	Ear
BMNH 45.10.25.48	260	130[fn 2]	130[fn 3]	28[fn 4]	13
USNM 38299	228	120	108[fn 5]	30[fn 6]	_[fn 7]
USNM 38300	253	132	121[fn 5]	30[fn 6]	?12–15[fn 7]

The skull was generally similar to that of *Oryzomys couesi*,[25] as were the teeth.[26] It was robust and bore well-developed supraorbital ridges (located above the eyes) on the braincase. The interparietal bone, part of the roof of the braincase, was small and narrow. The bony palate extended beyond the third molars.[3] The nasal bones extended further back than the premaxillaries, whereas these bones are usually about coterminous in *O. couesi*.[27] On average, the incisive foramina, which perforate the front part of the palate, were shorter than in *O. couesi*.[28] The zygomatic arch (cheekbone) appears to have been better developed in *O. antillarum*.[26]

In the three modern and numerous cave specimens, condylobasal length (a measure of skull length) varies from 28.9 to 31.2 mm (1.14 to 1.23 in) (one modern and two cave specimens only), length of the bony palate from 13.0 to 17.8 mm (0.51 to 0.70 in), width of the interorbital region (located between the eyes) from 4.78 to 6.33 mm (0.188 to 0.249 in), length of the incisive foramina from 5.1 to 6.6 mm (0.20 to 0.26 in), crown length of the upper molars from 4.36 to 5.20 mm (0.172 to 0.205 in), and crown length of the lower molars from 4.80 to 5.39 mm (0.189 to 0.212 in).[29]

History

Origin and subfossil records

The oldest well-dated record of *Oryzomys antillarum* is at Drum Cave in the Jacksons Bay Caves system, where it was found in a stratum radiocarbon dated to between 10,250 and 11,260 years before present according to a 2002 study.[31] It is present in several other undated sites that predate the human colonization of the island, around 1,400 years before present.[6] However, a site (Wallingford Roadside Cave) from the last interglacial, the Eemian, contains only the hystricognath rodents *Clidomys* and *Geocapromys browni* and lacks *Oryzomys*.[32] The presence of the rice rat on Jamaica before the arrival of humans disproves the hypothesis that it was introduced; instead, it must have reached the island by overwater dispersal through a rafting event, probably less than 125,000 years ago. During the last glacial period, low sea levels would have exposed much land between Jamaica and Central America, substantially decreasing the distance needed for the ancestor of *O. antillarum* to arrive on the island[33] and probably influencing sea currents so that rafts of vegetation from Central America would be more likely to reach Jamaica.[34] Species of *Oryzomys* are semiaquatic and closely associated with water, which may help to explain the occurrence of the genus on Jamaica.[35] The rice rat has

been found in many superficial, late Holocene cave deposits, some of which have been radiocarbon dated to within the last 1,100 years. Its remains also occur in some Amerindian archeological sites.[6] From its common and widespread occurrence in caves, Ray suggested that the rice rat occurred in many different habitats before European contact.[26] *O. antillarum* was the only sigmodontine rodent on any of the Greater Antilles, where the rodent fauna otherwise consists solely of hystricognaths and introduced rodents.[11]

Upper (left) and lower (right) molars of the holotype of *Oryzomys antillarum*[30]

Historical records

Although there are some early historical records of the rats of Jamaica, very little is to be found in them regarding *Oryzomys antillarum*, perhaps because the species declined rapidly following the European colonization of the island and because early authors failed to distinguish it from introduced rodents (the black rat, *Rattus rattus*; brown rat, *Rattus norvegicus*; and house mouse, *Mus musculus*).[36] Patrick Browne, in the 1756 *Civil and Natural History of Jamaica*, described a "House and Cane-Rat", a "Mouse", and a large "Water-Rat", which he said had been introduced to the island and become very common there.[37]

The brown rat (*Rattus norvegicus*) may have contributed to the extinction of *Oryzomys antillarum*.

In his *History of Jamaica* (1774), Edward Long recognized four Jamaican rats: Browne's "Water-Rat", termed the "Charles-price rat", which Long regarded as identical with the European water vole (*Arvicola*);[38] the "black house-rat", said to have been brought from England; and two he said were indigenous. The larger of those was a grayish "cane-rat"[39] and the smaller was a reddish "field-rat" as large as the English mole (the European mole, *Talpa europaea*).[40] Ray considered that the last may simply have been the house mouse, since the size of an English mole would be too small for *Oryzomys*.[41]

In *A Naturalist's Sojourn in Jamaica* (1851), Philip Henry Gosse listed the black and brown rat and the house mouse,[42] as well as the "Cane-piece Rat", which he described as *Mus saccharivorus*[43] and regarded as probably identical with Browne's "Water-Rat" and Long's "Charles-price Rat".[44] He also mentioned the two species Long had listed as indigenous.[45] Thomas and Ray both asserted that this "Cane-piece Rat" was most likely a brown rat, as judged from its measurements.[46] Gosse wrote that an early explorer, Anthony Robinson, had described and pictured this species in an unpublished manuscript, on the basis of a specimen 20 inches (51 cm) long, half of which consisted of the tail.[47] Ray was unable to examine Robinson's manuscript, but suggested that Robinson's rat could not have been the brown rat, because that species did not reach the Americas until about 1800, and may instead have been *O. antillarum*.[48]

Gosse had collected the British Museum specimen of *Oryzomys antillarum* in 1845, but may not have separated it from introduced rats found with it.[36] Coues noted that the two USNM specimens he examined were received after he had written the preceding part of his monograph;[49] later, Thomas and others wrote that these specimens were obtained around 1877,[50] but Ray asserted that they were taken before 1874.[51] No specimens have been collected since.[2]

Extinction

Oryzomys antillarum probably became extinct about the 1870s[52] and is currently listed as such by the IUCN Red List.[2] Its disappearance is usually attributed to the small Asian mongoose (*Herpestes javanicus*), which was introduced to Jamaica in 1872, and sometimes also to introduced *Rattus* species.[53] Ray, on the other hand, argued that the significance of the mongoose had been overrated. Instead, he suggested that *Oryzomys antillarum* may have been affected by the massive environmental changes that occurred on the island after the British takeover in 1655. In that period, the bulk of the island came to be used for cultivation, so that the native habitat of *Oryzomys* was destroyed. Thus, *Oryzomys* was reduced to competition with introduced rats in man-made habitats, to which the latter are well adapted. Perhaps, Ray wrote, the black rat may not have been able to extirpate *Oryzomys*, but the brown rat, a later and more assertive invader, brought it to extinction.[54] Cats and dogs preying on *Oryzomys* may also have contributed to its demise.[6]

Footnotes

1. In this list of synonyms, new combinations (the first use of a given combination of a genus and species name) are indicated by a colon between the name combination and the authority which first used the combination. No colon is used when the name is entirely new.
2. "Apparently stretched".[3]
3. "Imperfect at tip".[3]
4. Without claws.[3]
5. "Tip broken".[24]
6. With claws.[24]
7. "Wrinkled".[24]

References

1. Ray, 1962, plate V
2. Turvey and Helgen, 2008
3. Thomas, 1898, p. 177
4. Hershkovitz, 1966, p. 736
5. Honacki et al., 1982, p. 439
6. Morgan, 1993, p. 439
7. Goldman, 1918, p. 44; Turvey and Helgen, 2008
8. Coues, 1877, p. 116, footnote; Thomas, 1898, p. 177
9. Goldman, 1918, pp. 44–45
10. Anthony, 1920, p. 166
11. Allen, 1942, p. 88
12. Ray, 1962, p. 47
13. Musser and Carleton, 2005, p. 1147
14. Weksler et al., 2006, table 1, footnote e
15. Carleton and Arroyo-Cabrales, 2009, p. 116
16. Carleton and Arroyo-Cabrales, 2009, p. 106
17. Carleton and Arroyo-Cabrales, 2009, p. 117
18. Carleton and Arroyo-Cabrales, 2009, p. 107
19. Weksler et al., 2006, table 1

20. Weksler, 2006, p. 3
21. Musser and Carleton, 2005
22. Goldman, 1918, p. 44
23. Ray, 1962, p. 44
24. Ray, 1962, table 3
25. Goldman, 1918, p. 44; Ray, 1962, p. 44
26. Ray, 1962, p. 46
27. Ray, 1962, p. 45
28. Ray, 1962, pp. 45–46
29. Ray, 1962, table 4
30. Ray, 1962, plate VI
31. McFarlane et al., 2002, p. 122
32. Fincham et al., 2000, p. 50
33. Morgan, 1993, p. 439; Fincham et al., 2000, p. 50; McFarlane et al., 2000, p. 122; Ray, 1962, p. 176
34. Ray, 1962, p. 174
35. Carleton and Arroyo-Cabrales, 2009, p. 114
36. Ray, 1962, p. 31
37. Browne, 1756, pp. 484–485
38. Long, 1774, p. 899
39. Long, 1774, p. 900
40. Long, 1774, p. 901
41. Ray, 1962, p. 32
42. Gosse, 1851, p. 443
43. Gosse, 1851, p. 444, footnote
44. Gosse, 1851, p. 449
45. Gosse, 1851, pp. 448–449
46. Thomas, 1898, p. 177; Ray, 1962, p. 32
47. Gosse, 1851, p. 445
48. Ray, 1962, pp. 32–33
49. Coues, 1877, p. 116, footnote
50. Thomas, 1898, p. 177; Goldman, 1918, p. 45; Allen, 1942, p. 88; Morgan, 1993, p. 439; Turvey and Helgen, 2008
51. Ray, 1962, p. 34
52. Ray, 1962, p. 34; Allen, 1942, p. 87
53. Turvey and Helgen, 2008; Allen, 1942, pp. 87–88; Morgan, 1993, p. 439; Ray, 1962, p. 34
54. Ray, 1962, pp. 33–34

Literature cited

- Allen, G.M. 1942. Extinct and vanishing mammals of the Western Hemisphere with the marine species of all the oceans (https://www.biodiversitylibrary.org/page/20698982). American Committee for International Wildlife Protection, Special Publications 11:1–620.
- Anthony, H.E. 1920. A zoologist in Jamaica (https://books.google.com/books?id=2wkVAAAAYAAJ&pg=PA157). Natural History 20:157–168.

- Browne, P. 1756. The Civil and Natural History of Jamaica. In Three Parts (https://www.biodiversitylibrary.org/page/11268005). London, viii + 503 pp.
- Carleton, M.D. and Arroyo-Cabrales, J. 2009. Review of the *Oryzomys couesi* complex (Rodentia: Cricetidae: Sigmodontinae) in western Mexico (http://digitallibrary.amnh.org/dspace/bitstream/2246/6035/4/331-03-carleton.pdf). Bulletin of the American Museum of Natural History 331:94–127.
- Coues, E. 1877. Muridae (https://www.biodiversitylibrary.org/page/26569090). Pp. x+264 in Coues, E. and Allen, J.A. Monographs of North American Rodentia. Report of the United States Geological Survey of the Territories 11:xii+x+1091 pp.
- Fincham, A., Draper, G. and MacPhee, R. 2000. Jamaica Underground: The Caves, Sinkholes and Underground Rivers of the Island. 2nd ed. University of the West Indies Press, 447 pp. ISBN 978-976-640-036-1
- Goldman, E.A. 1918. The rice rats of North America (https://books.google.com/books?id=HKYrAAAAYAAJ&pg=PA44). North American Fauna 43:1–100.
- Gosse, P.H. 1851. A naturalist's sojourn in Jamaica (https://books.google.com/books?id=pzsXAAAAYAAJ&pg=PA443). London: Longman, Brown, Green, and Longmans, xxiv + 508 pp.
- Hershkovitz, P. 1966. Mice, land bridges, and Latin American faunal interchange (https://www.biodiversitylibrary.org/page/2652279). Pp. 725–795 in Wenzel, R.L. and Tipton, V.J. (eds.). Ectoparasites of Panama. Chicago: Field Museum of Natural History.
- Honacki, J.H., Kinman, K.E. and Koeppl, J.W. (eds.). 1982. Mammal Species of the World: A Taxonomic and Geographic Reference. 1st ed. Lawrence, Kansas: Allen Press, Inc., and The Association of Systematics Collections, 694 pp. ISBN 978-0-942924-00-8
- Long, E. 1774. The History of Jamaica. Volume 3 (https://books.google.com/books?id=U7w_AAAAcAAJ&pg=PA899). London: printed for T. Lowndes, pp. i–viii + 596–976.
- McFarlane, D.A., Lundberg, J. and Fincham, A.G. 2002. A late Quaternary paleoecological record from caves of southern Jamaica, West Indies (http://www.caves.org/pub/journal/PDF/V64/v64n2-McFarlane.pdf). Journal of Cave and Karst Studies 64(2):117–125.
- Morgan, G.S. 1993. Quaternary land vertebrates of Jamaica. Geological Society of America Memoir 182:417–442.
- Musser, G.G. and Carleton, M.D. 2005. Superfamily Muroidea. Pp. 894–1531 in Wilson, D.E. and Reeder, D.M. (eds.). Mammal Species of the World: a taxonomic and geographic reference. 3rd ed (http://www.bucknell.edu/msw3). Baltimore: The Johns Hopkins University Press, 2 vols., 2142 pp. ISBN 978-0-8018-8221-0
- Ray, C.E. 1962. The Oryzomyine Rodents of the Antillean Subregion. Doctor of Philosophy thesis, Harvard University, 211 pp.
- Thomas, O. 1898. On indigenous Muridæ in the West Indies; with the description of a new Mexican *Oryzomys* (https://www.biodiversitylibrary.org/page/15627810). Annals and Magazine of Natural History (7)1:176–180.
- Turvey, S. and Helgen, K. 2008. *Oryzomys antillarum* (http://www.iucnredlist.org/apps/redlist/details/full/136540/0). In IUCN. IUCN Red List of Threatened Species. Version 2009.2. <www.iucnredlist.org (https://web.archive.org/web/20140627094911/http://www.iucnredlist.org/)>. Downloaded on November 30, 2009.
- Weksler, M., Percequillo, A.R. and Voss, R.S. 2006. Ten new genera of oryzomyine rodents (Cricetidae: Sigmodontinae) (http://hdl.handle.net/2246/5815). American Museum Novitates 3537:1–29.

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